

SportsArtFITNESS

C520R/C531R Repair Manual (Electronic)



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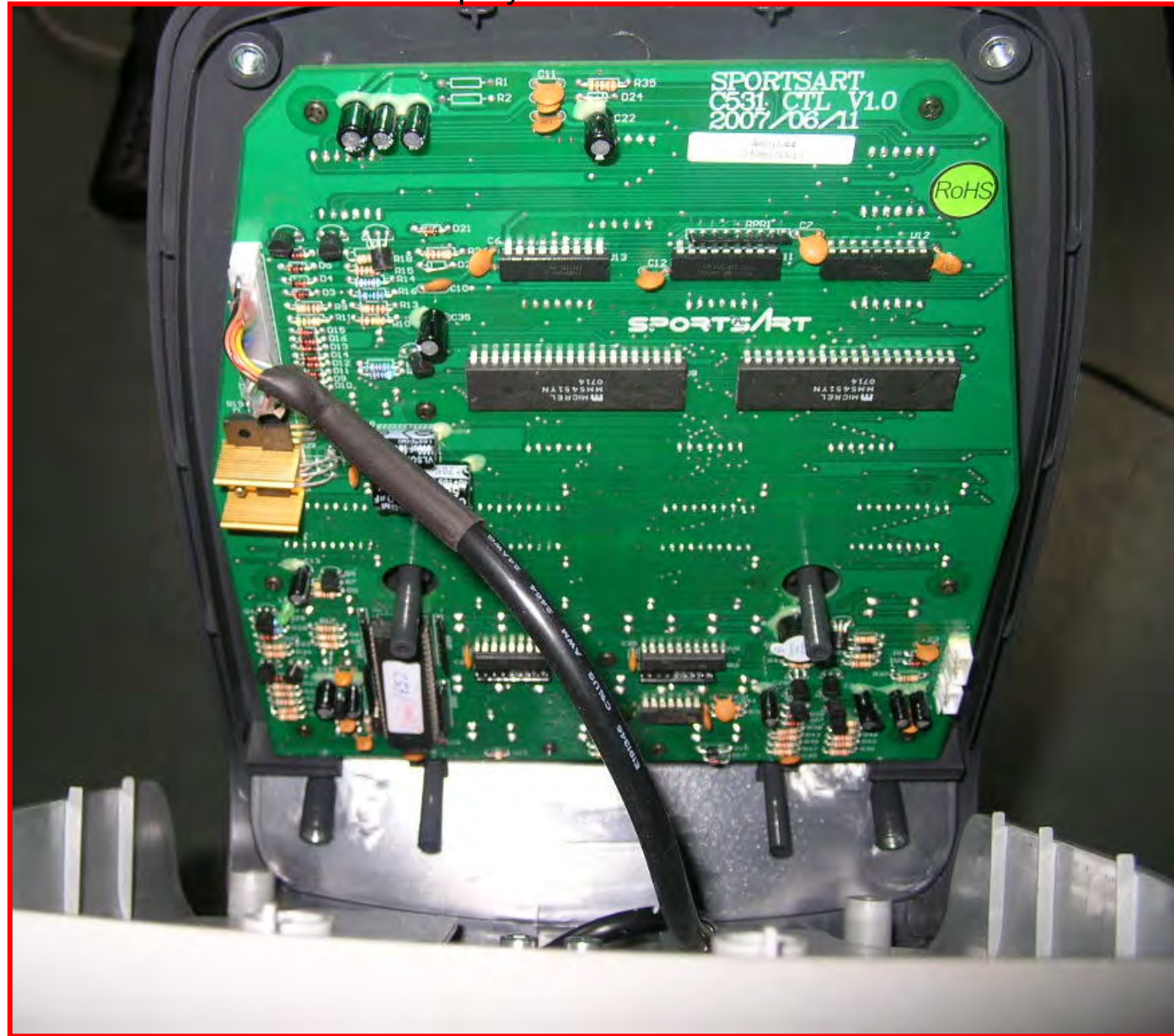
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1-1-1. Display Picture - C520R/C531R

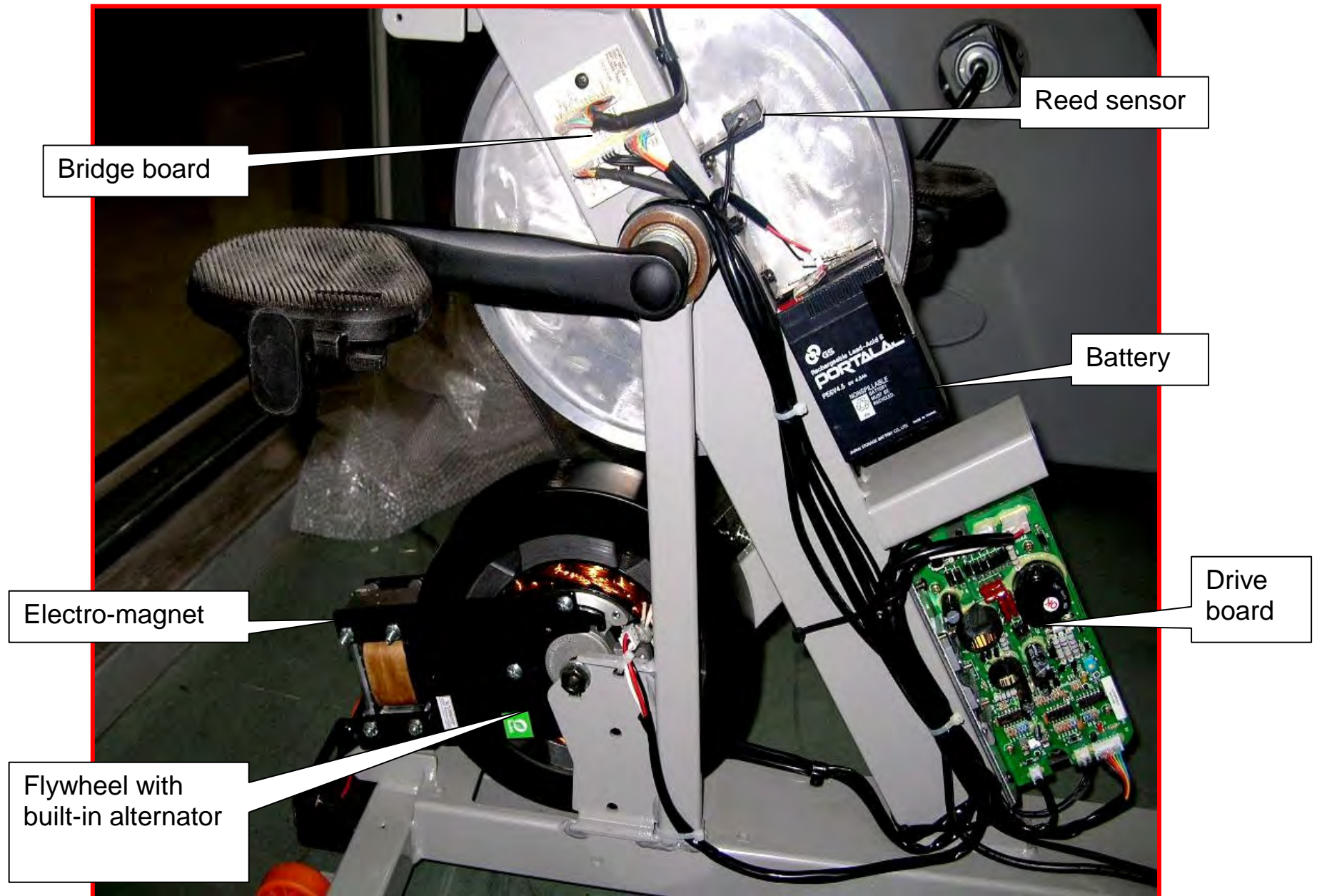
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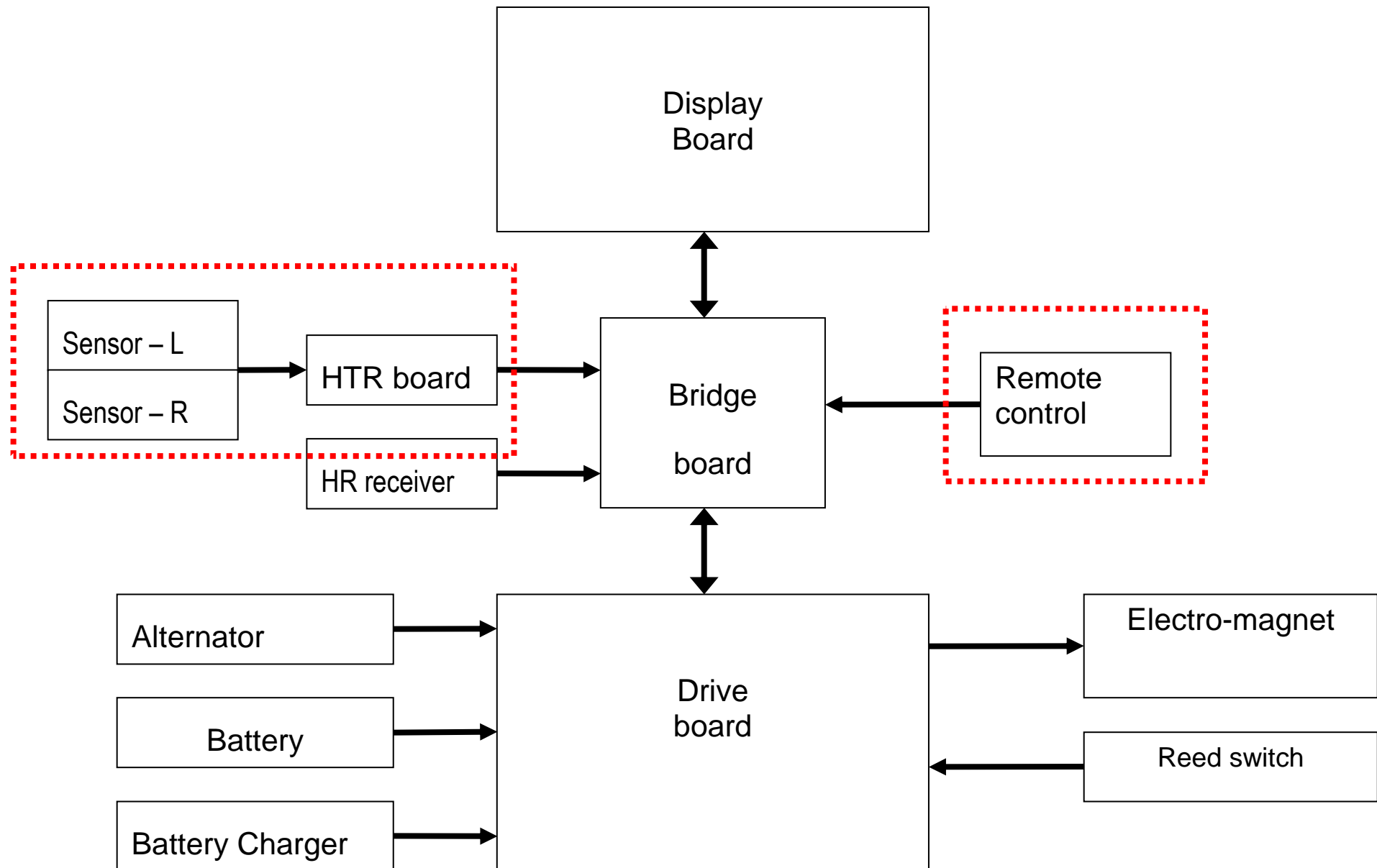
1-2-1. Component Placement - C520R/C520U Display



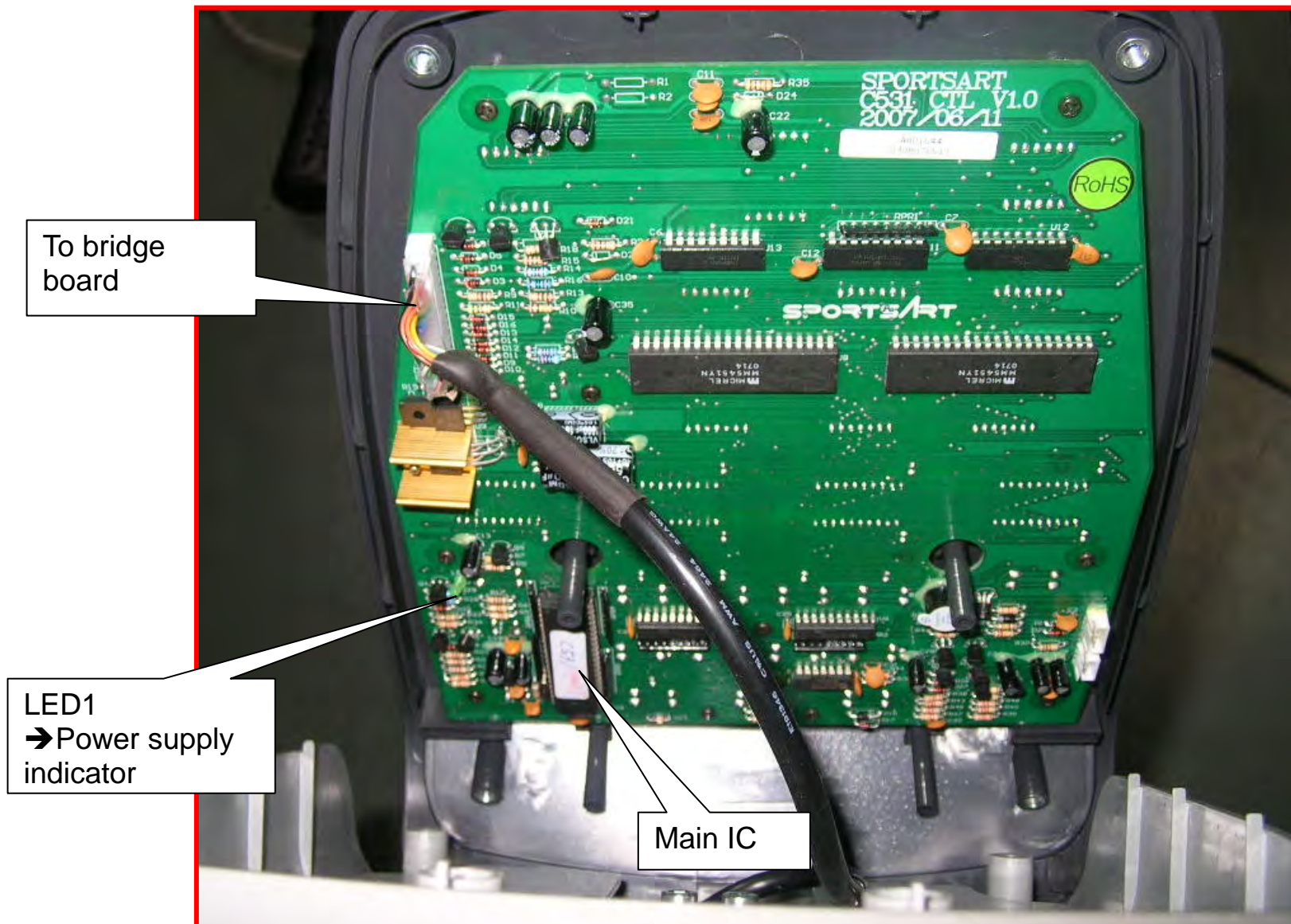
1-2-2. Component Placement - C520R/C531R Lower Body



1-3-1. Block Diagram - C520R/C531R Display Electronics



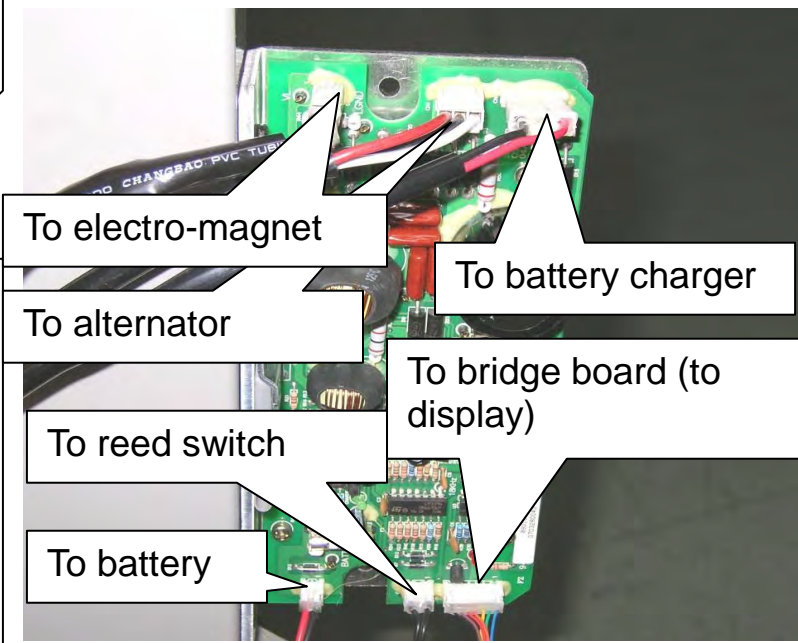
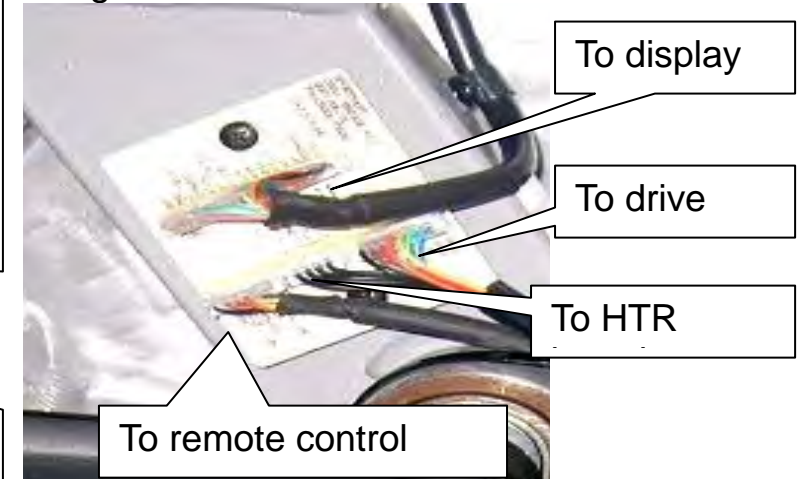
1-4-1. Cable Connections - C520R/C531R Display



1-4. Cable Connections - C520R/C531R Drive Board

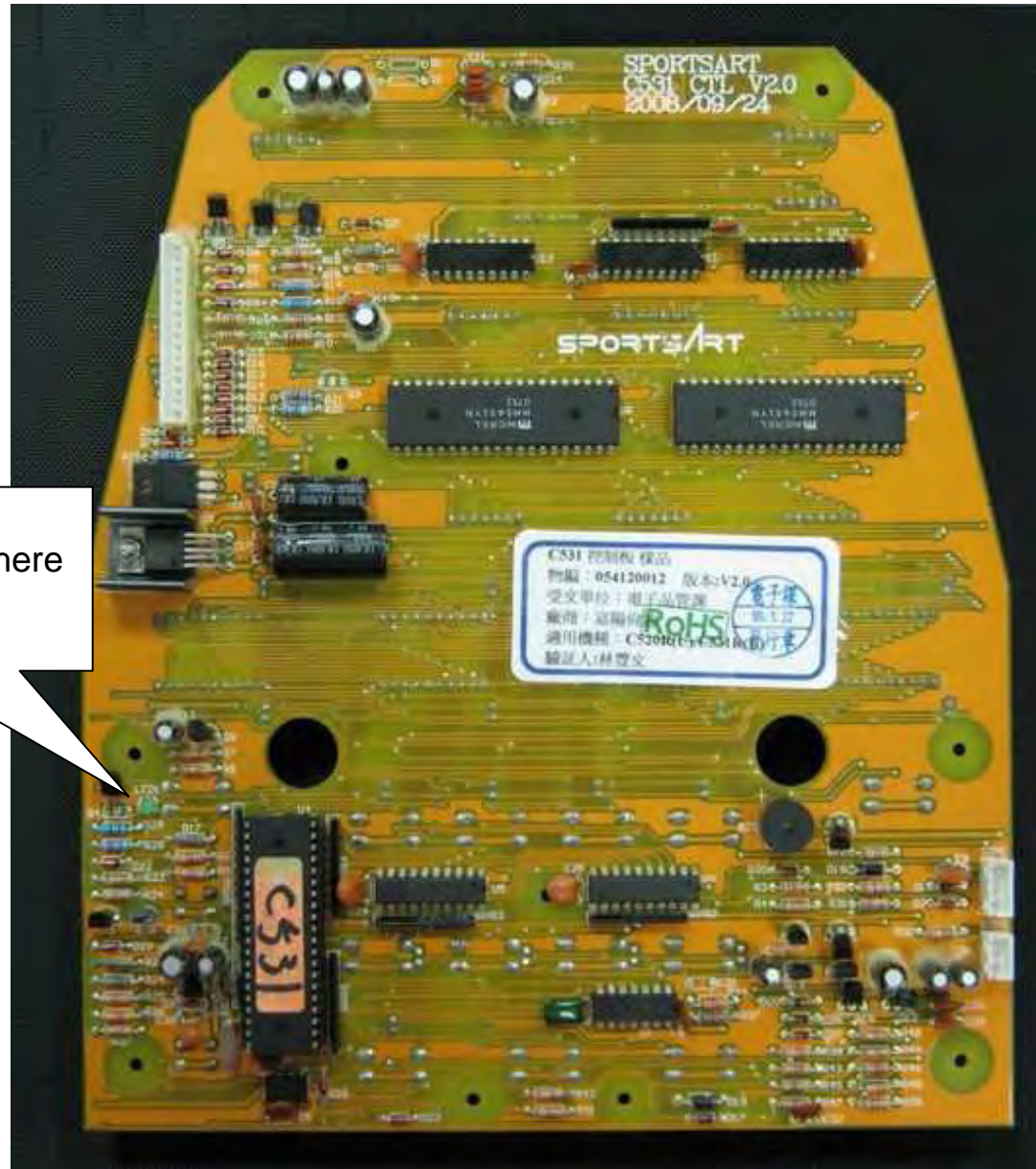


Bridge board cable connections

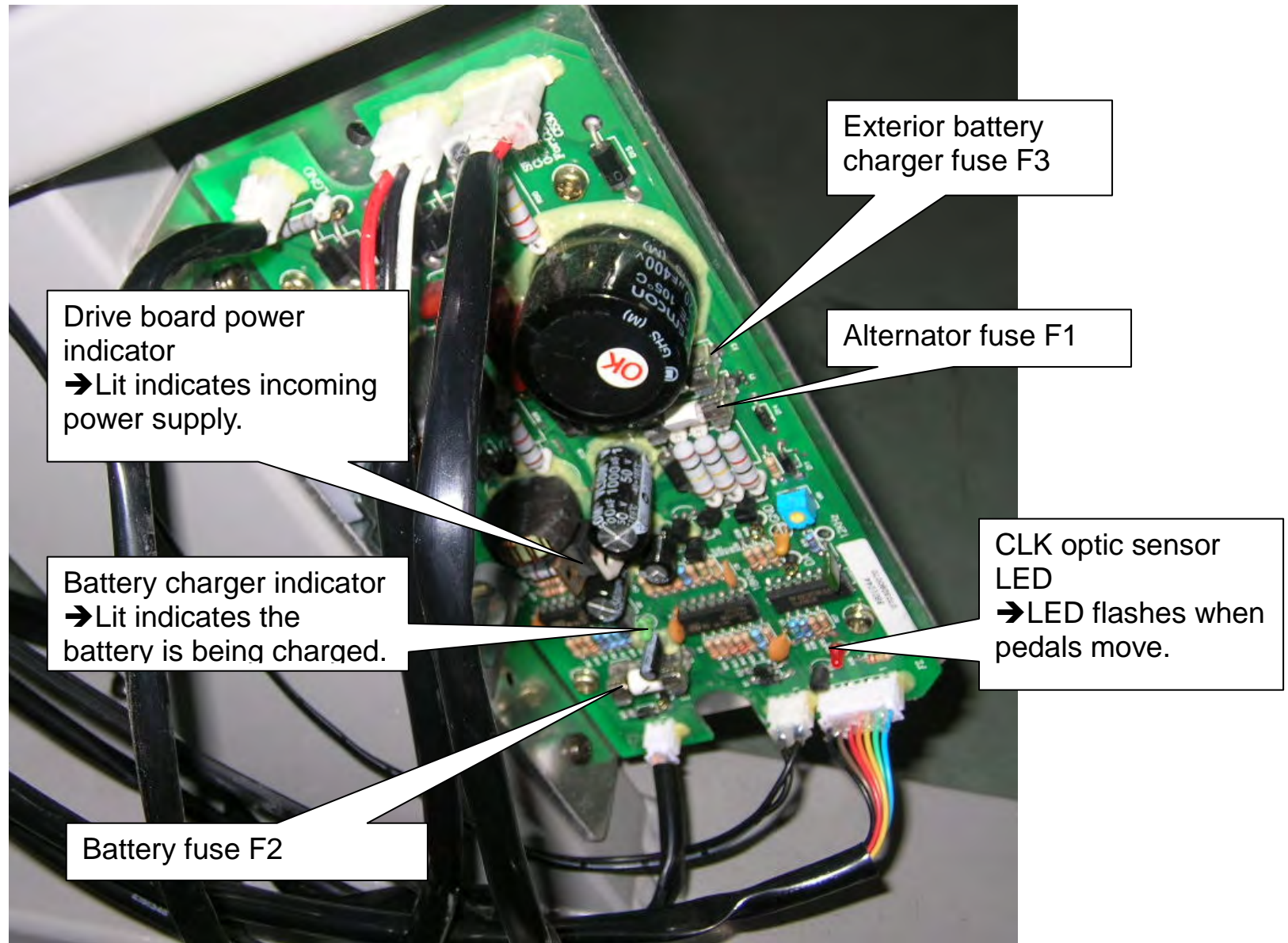


1-5. Indicator LEDs - C520R / C531R Display

Indicator Led1
→ Lit indicates that there
is incoming power
supply.



1-5. Indicator LEDs - C520R/C531R Drive Board



1-6. C520R Electronics Specifications

Specification	Contents	Notes
Power supply	AC alternator	
Backup power supply	6.4 VA battery Battery automatically recharges or can be recharged via an exterior charger.	
Resistance	Electro-magnet	
Speed detection	Reed switch	
Resistance	LEVEL 1 - LEVEL 20	
Display method	Segment array and numerical LEDs	
Main window	Dot matrix	
Character window	65% HR TARGET, Heart rate, 80% HR TARGET WORKOUT LEVEL / CALORIES / TIME / RPM DISTANCE / CAL/HR / WATTS / SPEED	
Workout programs	INTERVAL / RANDOM / HILL / TRACK / ZONE TRAINER / CARDIO / WT LOSS	
Heart rate control programs	CARDIO, WT LOSS, ZONE TRAINER	
Heart rate	Telemetry heart rate detection	
User IDs	Four user IDs (USER1- USER4)	
Motion	Belt operated	

2-1. Display Malfunction Troubleshooting Table - C520R/C531R

Malfunction	Circumstance	Inspection and Test Points	Suggested Components	Notes
Cannot start unit	The display is not lit; I pedal the bike; but the display still doesn't light.	1. Inspect cable connections. 2. Inspect drive board fuse. 3. Inspect drive board power LED. 4. Inspect the alternator.	1. drive board fuse 2. drive board 3. alternator	
Cannot start unit	When I don't pedal the bike, the display does not light.	1. Inspect battery fuse on the drive board. 2. Measure battery voltage. Battery voltage should be 5.5V or more. 3. If battery voltage is under 5.5V, pedal the unit at over 50 RPM to recharge the battery. 4. Replace the battery if voltage is under 2.0 and it won't recharge.	1. battery fuse on the drive board 2. battery	
Display won't operate	I start pedaling the bike, but the display shows no reaction, and values don't change.	RPM signal didn't enter the display IC. Inspect RPM signal. 1. Inspect cable connections and the bridge board. 2. Inspect the reed switch and magnet. 3. Inspect the drive board CLK LED. 4. Inspect the reed switch and its wire.	1. magnet 2. reed switch	
No resistance	I pedal the bike and press resistance keys. Resistance values on the display change. But there is no resistance.	1. Inspect cable connections. 2. Inspect alternator startup. If alternator will not start unit, there will be no resistance. 3. Inspect the electro-magnet and its wires. 4. Test whether the drive board emits voltage to the electro-magnet.	1. drive board	

Telemetry heart rate detection malfunction	Telemetry heart rate malfunction	<ol style="list-style-type: none"> 1. Inspect heart rate transmitter and its batteries. Replace batteries if batteries haven't been replaced for a long time. 2. Inspect heart rate receiver board cable connections. 3. Test or replace the heart rate receiver board. 4. Inspect environment for sources of interference, such as speakers and lights. 	<ol style="list-style-type: none"> 2. telemetry heart rate transmitter 3. telemetry heart rate receiver board 	
Contact heart rate malfunction	Contact heart rate malfunction	<ol style="list-style-type: none"> 1. Inspect bridge board HTR cable. 2. Inspect HTR indicator LED on the drive board. 3. Replace the HTR board. 	1. HTR board	C531R
Key malfunction (display)	No key function, or continual key function	<ol style="list-style-type: none"> 1. Replace the display key switches. 	1. display keys	
Remote malfunction	Press remote keys; display shows no reaction.	<ol style="list-style-type: none"> 1. Inspect the remote and bridge board wire connections. 2. Replace the remote controller. 	1. remote control	C531R
Excessive resistance	Pedal on the unit; resistance is too heavy.	<ol style="list-style-type: none"> 1. Inspect all wire connections and whether screws have created an electrical short. 2. Move the flywheel with your hand to see whether the electro-magnet is stuck on the flywheel. 3. Inspect whether drive board components have an electrical short, sending maximum power to the electro-magnet, causing excessive resistance. 	1. drive board	
Total distance		<ol style="list-style-type: none"> 1. Press workout level<▲>+<▼>+<stop> to see total distance. 		

Troubleshooting

Model: C520R/C531R

Malfunction: No start up (alternator)

Circumstance: Pedal on the bike; the display does not light.

Possible causes: 1. Cables are not connected.

2. Drive board malfunction

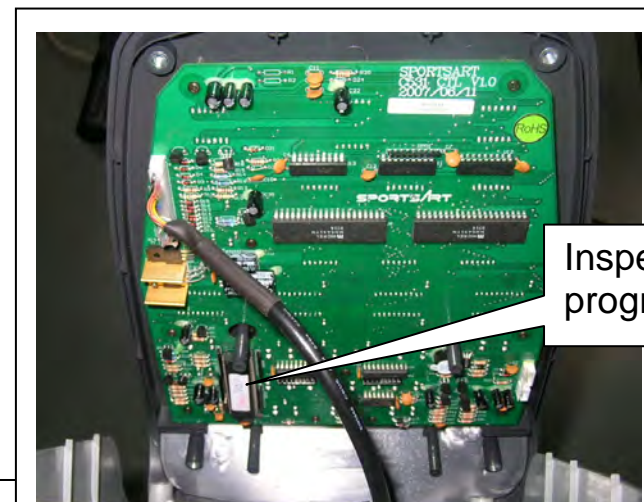
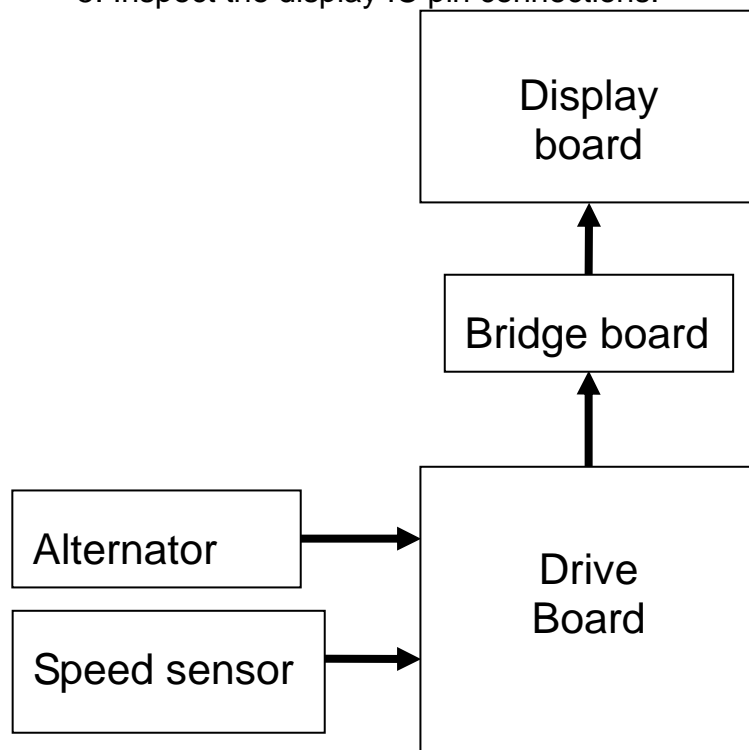
Troubleshooting: 1. Inspect all cable and bridge board connections.

2. Inspect alternator wire connections.

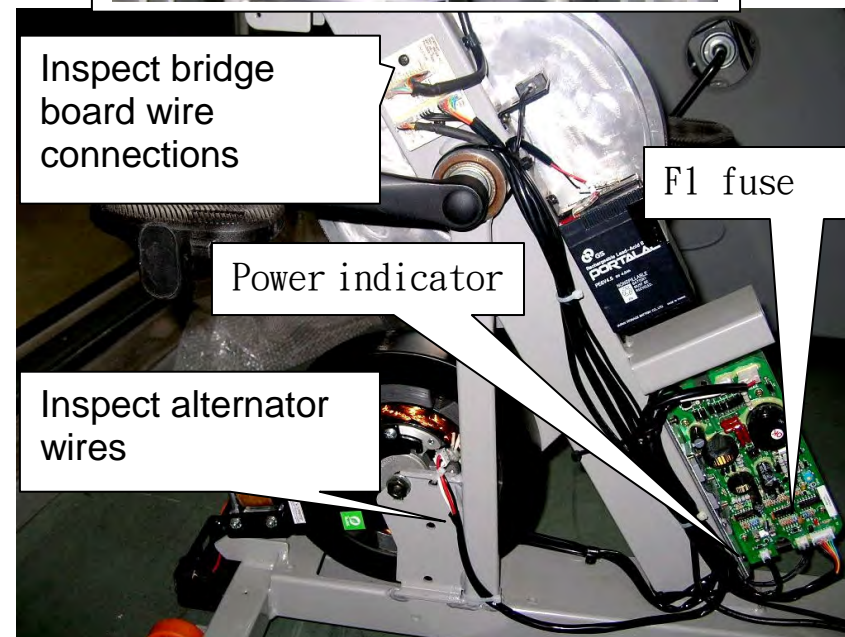
3. Inspect cable connections, fuse F1, and PWR LED at the drive board.

4. Replace the drive board.

5. Inspect the display IC pin connections.



Inspect the program IC



Troubleshooting

Model: C520R/C531R

Malfunction: No start up (battery)

Circumstance: Display shuts off if you don't pedal.

Possible causes: 1. Cables are not connected.

2. Battery voltage is too low.

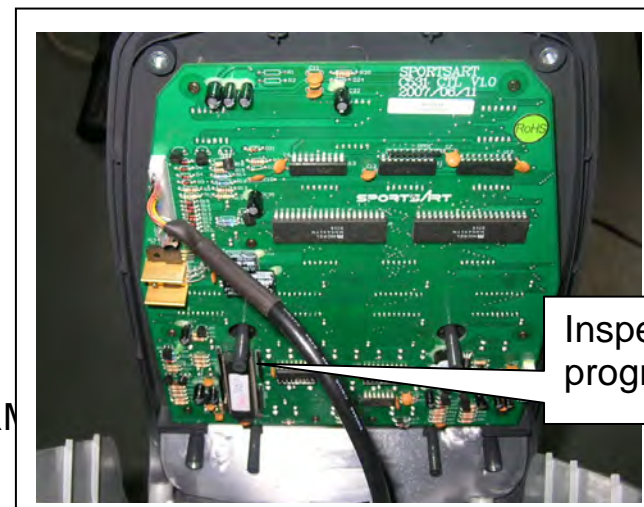
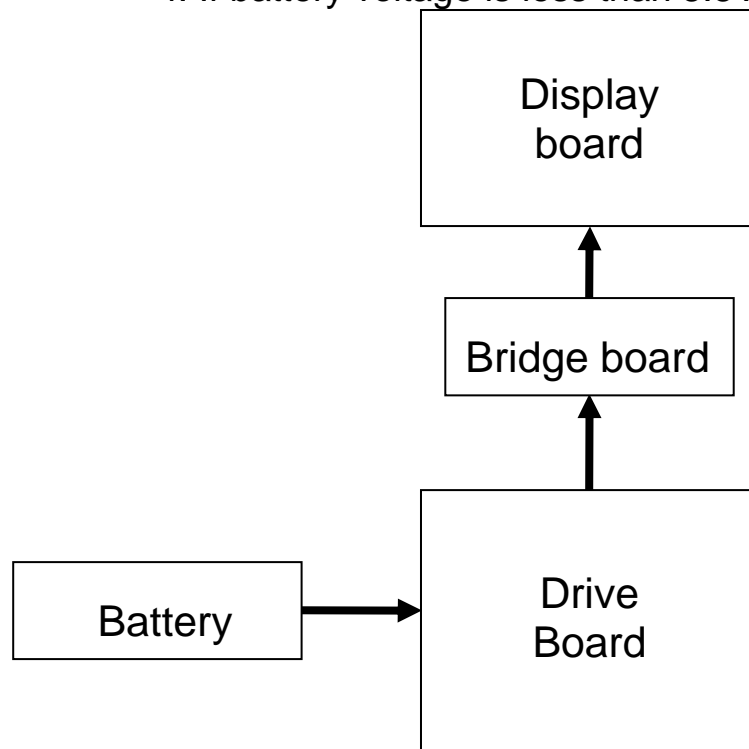
Troubleshooting: 1. Inspect all cable connections.

Inspect connections at the bridge board.

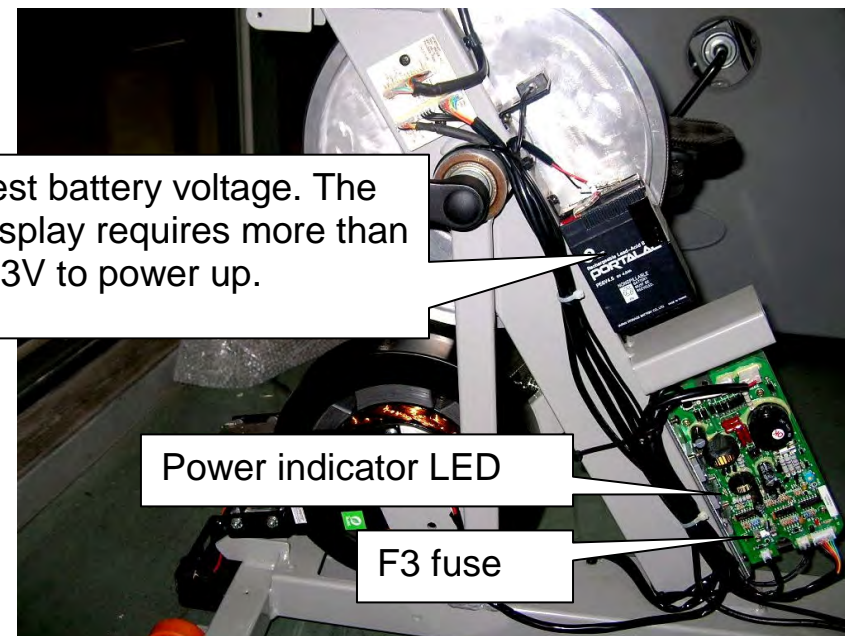
2. Test battery voltage. Normal is 5.5V or more.

3. Inspect drive board F2 fuse.

4. If battery voltage is less than 5.5V, pedal at 50 RPM



Inspect the program IC.



Test battery voltage. The display requires more than 5.3V to power up.

Power indicator LED

F3 fuse

Troubleshooting

Model: C520R/C531R

Malfunction: No RPM value

Circumstance: 1. No RPM value appears.

2. Pedal the bike; the display shows no reaction.

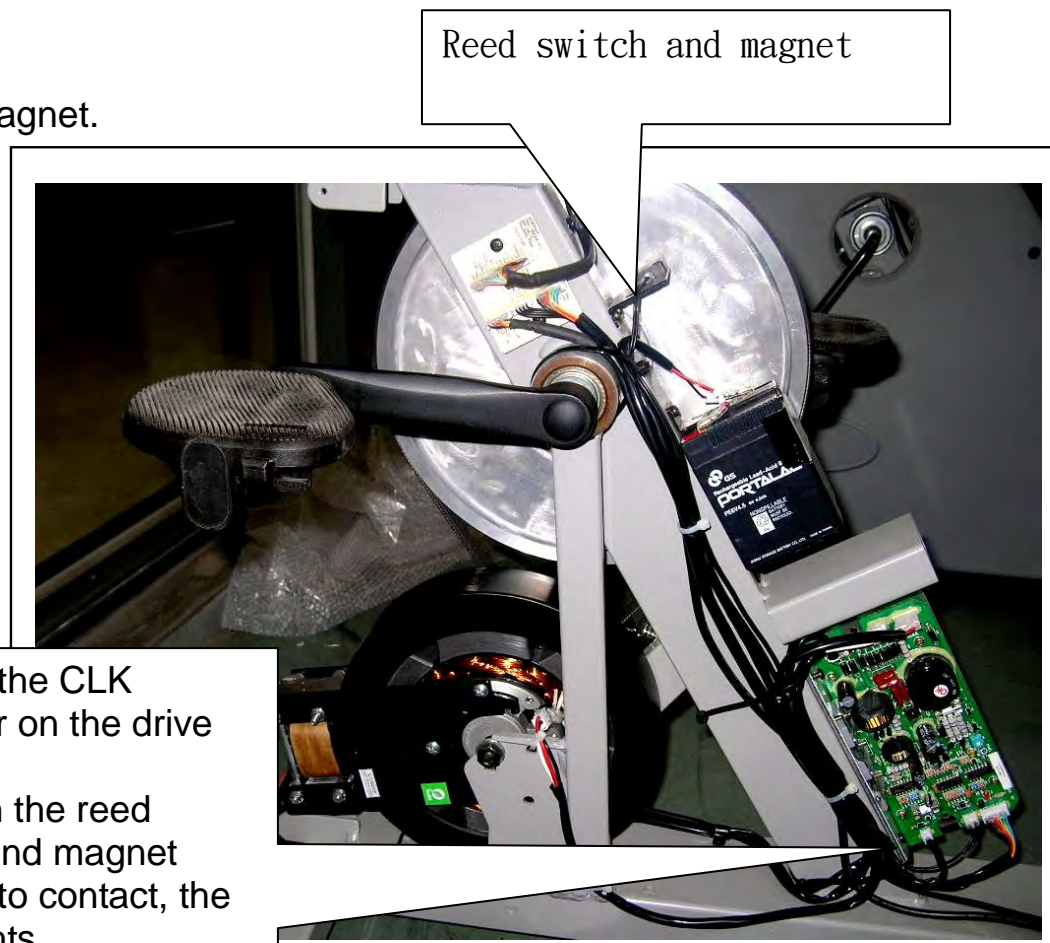
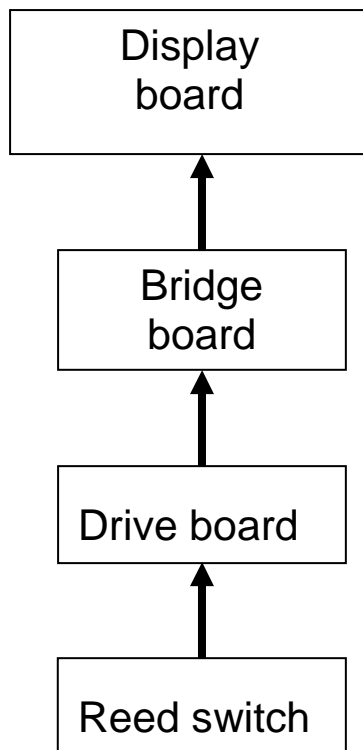
Possible causes: 1. Reed switch and magnet

2. Wire connections

Troubleshooting: 1. Inspect the reed switch and magnet.

2. Inspect all cable connections.

3. Inspect the drive board CLK signal indicator LED.



Troubleshooting

Model: C520R/C531R

Malfunction: No resistance

Circumstance: Pedal on the bike; there is no resistance.

Possible causes: 1. Cables are not connected.

2. Drive board is defective.

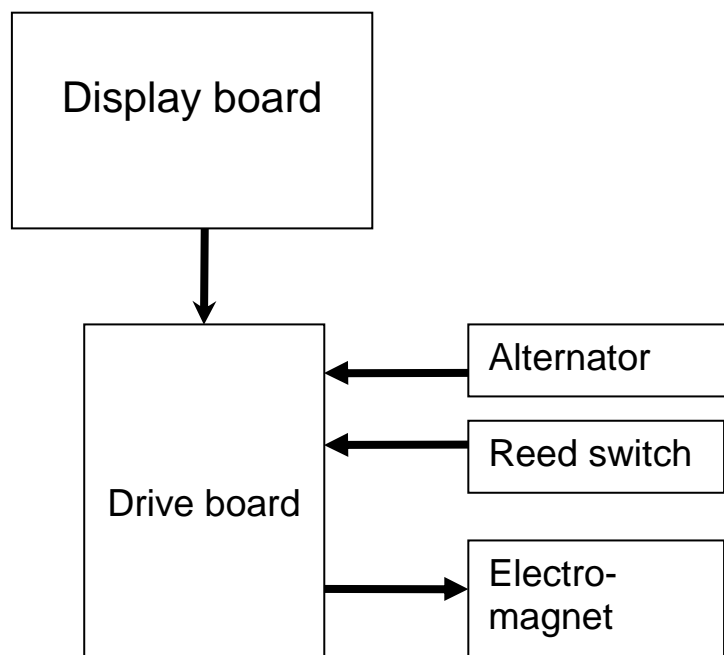
Troubleshooting: 1. Inspect all cable connections.

2. Inspect whether an RPM value appears when you pedal the bike. If not, inspect the reed switch and magnet.

3. Inspect whether unit starts via the alternator.

4. Inspect the drive board fuse. Measure voltage from the drive board to the magnet.

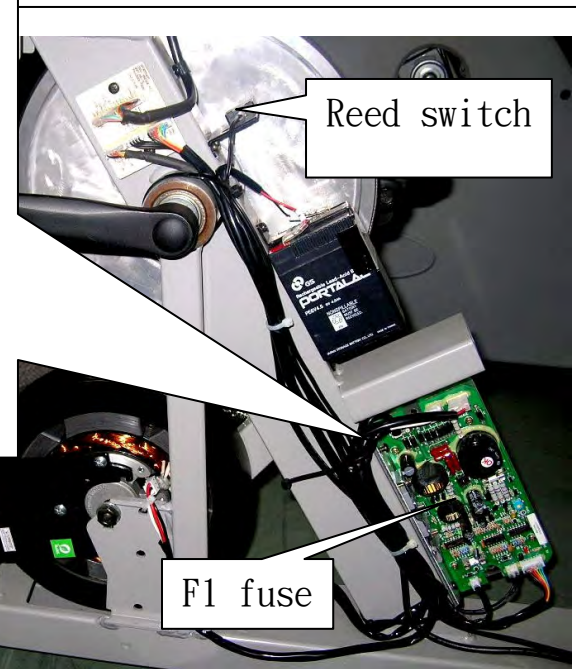
5. Inspect the electro-magnet wires and whether the electro-magnet has attracts metal.



Inspect drive board
CON2 voltage:

LEV 5 → 6.3V

LEV 15 → 10V



Troubleshooting

Model: C520R/C531R

Malfunction: Excessive resistance

Circumstance: Pedal the bike; resistance is excessively heavy.

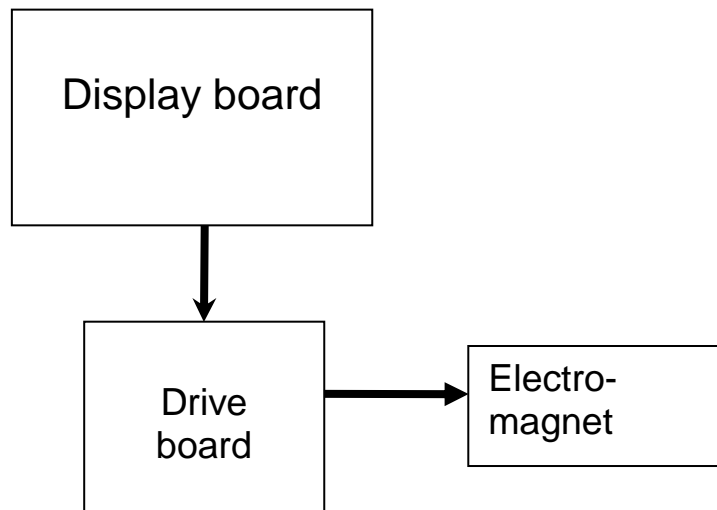
Possible causes: 1. There is an electrical short in the cables.

2. Drive board components have an electrical short.

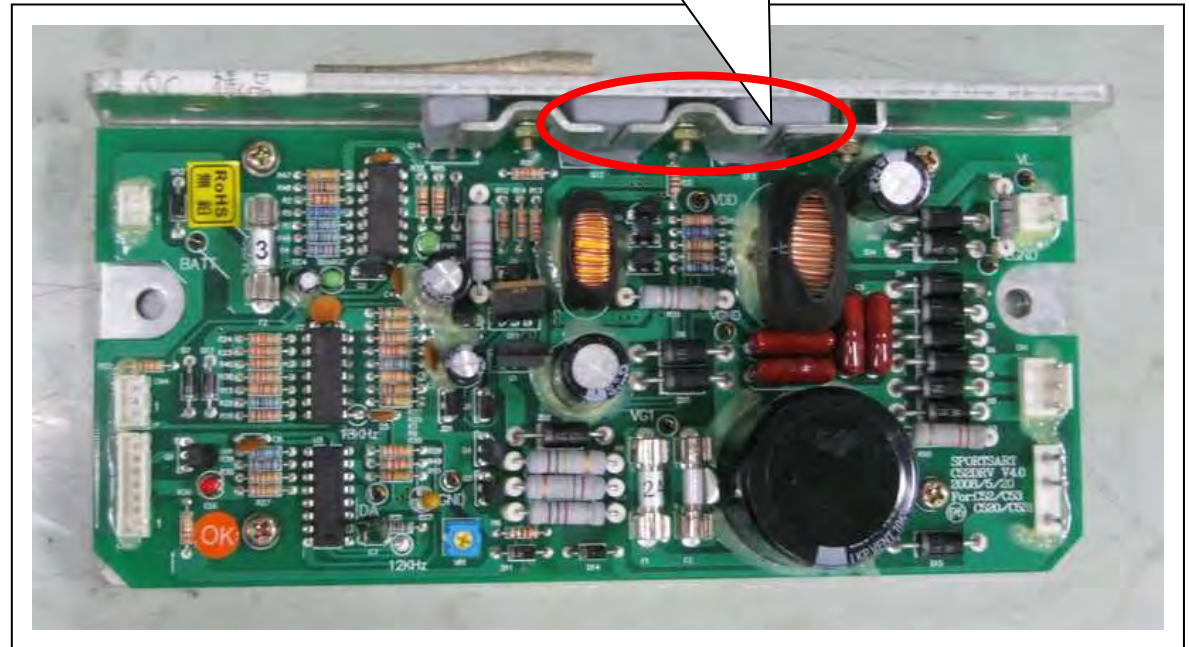
Troubleshooting: 1. Inspect all cable connections. Inspect cables for damage.

2. Inspect drive board power components for a short.

3. Replace the drive board.



Inspect IGBTs for a short



Troubleshooting

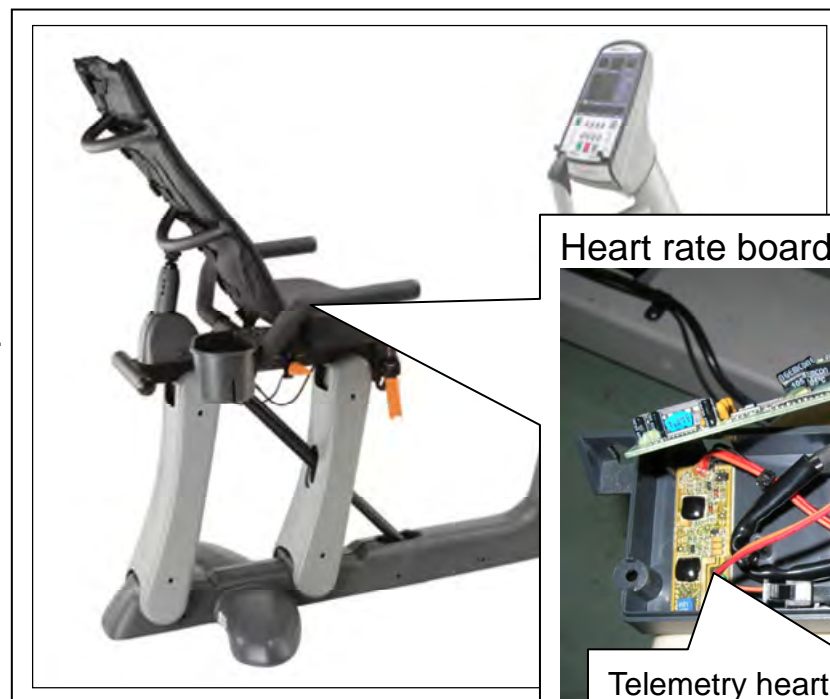
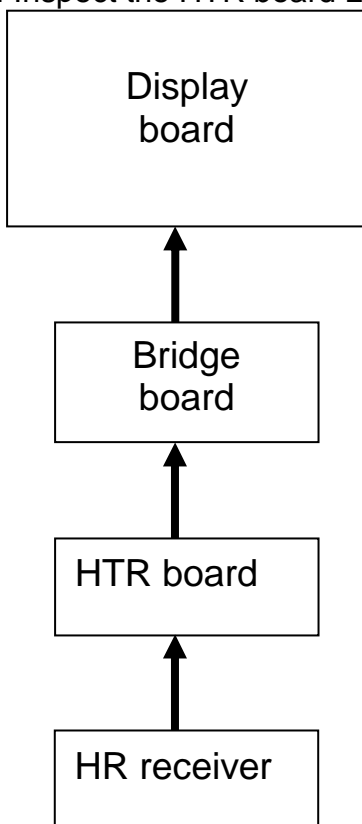
Model: C520R/C531R

Malfunction: Telemetry heart rate malfunction

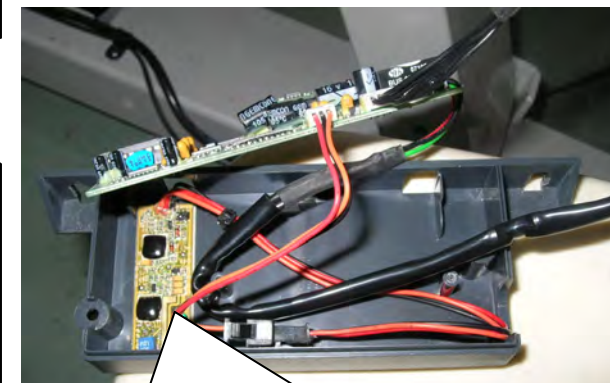
Circumstance: Heart rate value does not appear.

Possible causes: 1. Telemetry transmitter batteries.
2. Heart rate receiver board malfunction.
3. Environmental interference, possibly from lights or speakers.

Troubleshooting: 1. Replace the heart rate transmitter strap or its batteries.
2. Inspect heart rate receiver board connections.
3. Inspect the HTR board LEDs.



Heart rate board container



Telemetry heart rate receiver board

Heart rate transmitter strap
(battery location)



Troubleshooting

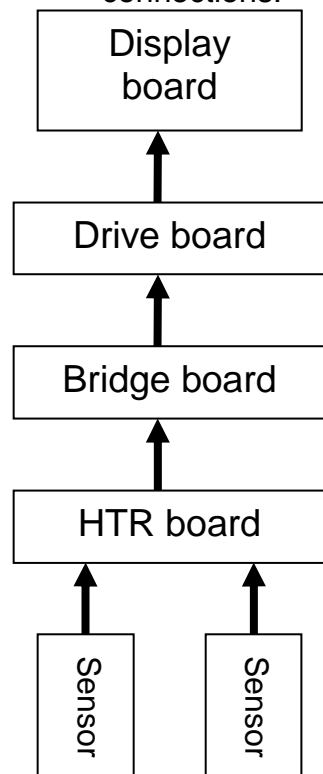
Model: C531R

Malfunction: Contact heart rate (HTR) malfunction

Circumstance: Hold HTR contact plates; heart rate value is incorrect.

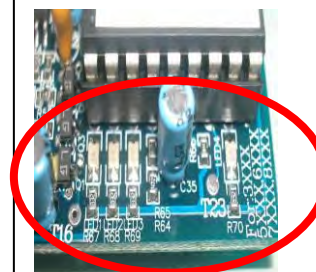
Possible causes: 1. HTR wires are disconnected.
2. HTR board is defective.

Troubleshooting: 1. Inspect display wire connections.
2. Inspect the HTR wire on the drive board.
3. Inspect the HTR bridge board and HTR board indicator LEDs.
4. Inspect the HTR contacts and their wire connections.



HTR board indicator LEDs

LED	Name	Explanation
LED1	Telemetry	Flashes to indicate incoming telemetry signal.
LED2	HTR contact	Lights to indicate hands on contact plates.
LED3	HTR output	Flashes to indicate incoming HTR (contact) signal.
LED4	Heart rate signal output	Flashes to indicate heart rate signal output to the display



HTR board placement



Troubleshooting

Model: C531R

Malfunction: Remote control malfunction

Circumstance: Press remote control keys; there is no response.

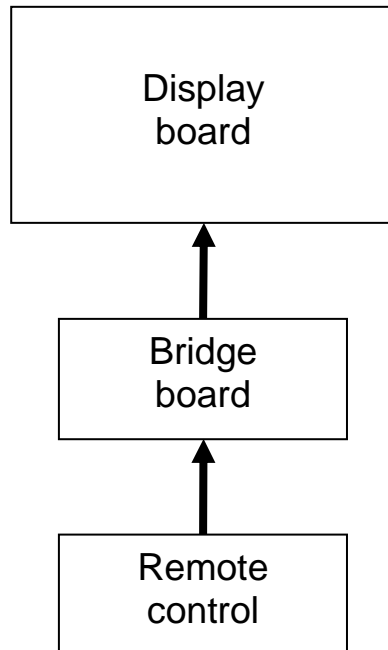
Possible causes: 1. Wire from the remote control to the display is defective.

2. Remote control keys are defective.

Troubleshooting: 1. Inspect remote control wire connections.

2. Inspect bridge board wire connections.

3. Replace the remote control.



Inspect the remote control wire



4-1. Mechanical Maintenance Schedule -C531R/C520R

Item	Inspect and maintain	Daily	Weekly	Monthly
1	Wipe exterior clean	◎		
2	Level unit	◎		
3	Inspect screws		◎	
4	Inspect pedals for noise		◎	
5	Inspect seat back angle adjustment		◎	
6	Inspect seat fore/aft adjustment		◎	
7	Inspect seat bottom angle adjustment		◎	



4-2. Mechanical Troubleshooting - C520R/C531R

Item	Malfunction	Inspect
1	Unit wobbles or rocks.	Adjust levelers.
2	Seat back angle won't adjust.	Replace seat back angle shock.
3	Pedals make noise.	Replace pedals.
4	Seat position won't change.	Replace the shock under the seat.
5	Pedals free spin with no resistance.	Inspect drive pulley, flywheel, and belt.
6	Movement seems to catch while you pedal.	Inspect drive pulley, flywheel, and belt.

